The doctoral thesis titled "Development of competency to manipulate structured data, information, and knowledge in ICT education" is carried out in the held of ICT education theory, a pedagogical discipline dealing with a theory of educational action leading to the development of information literacy. The research project was connected to the previous research activities realized in the field by author's department members.

The research was focused on the elaboration of form and approach to the development of competency to handle structured data, information and knowledge. This competency is described as a set of abilities and skills to manipulate such structures, for example structured text, diagram of database model, mind map, or concept map, and the ability to transform these structures among each other. These skills are conceived to play an important role in dealing with informational tasks and, therefore, are a key component of several information literacy development models including Big6™ (Eisenberg - Berkowitz, 1990, 1999), Information Seeking (Kuhlthau, 1993, 1999), Information Skills (Irving, 1992), Pitts/Stripling Research Process (Stripling Pitts, 1988; Pitts et al., 1995; Veltze, 2003), and New South Wales Information Process NSW (1989). The project was concerned with manipulation of structures representations at the level of generalizing scheme including particularly psycho-didactic aspect, with regard to the specifics of representations of structures with commercially available technical equipment.

The concept of structure is characterised at a very abstract level as a phenomenon of the interrelations or arrangement of parts in a complex entity. The theoretical part of thesis deals with some psychological models of human cognition related to the visual perception. These models cover Gestalt theory, dual coding theory, schema theory, cognitive load theory, and semantic networks.